

S. alba
B. napus
Soybean
Peanut
Squash
Flax
Sunflower
Safflower
Maize

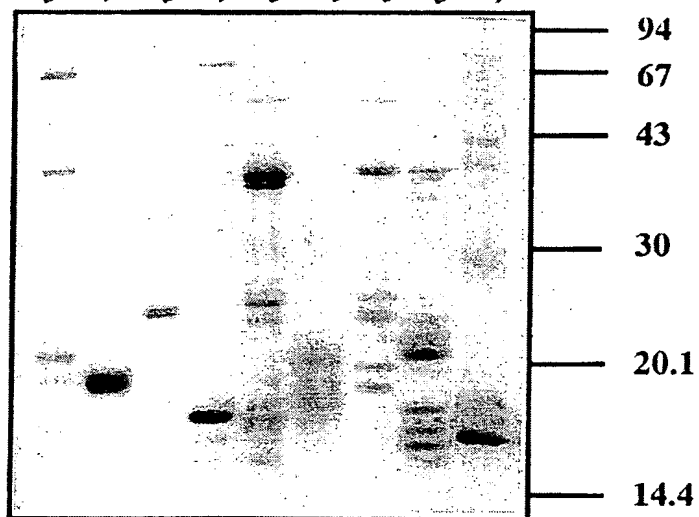
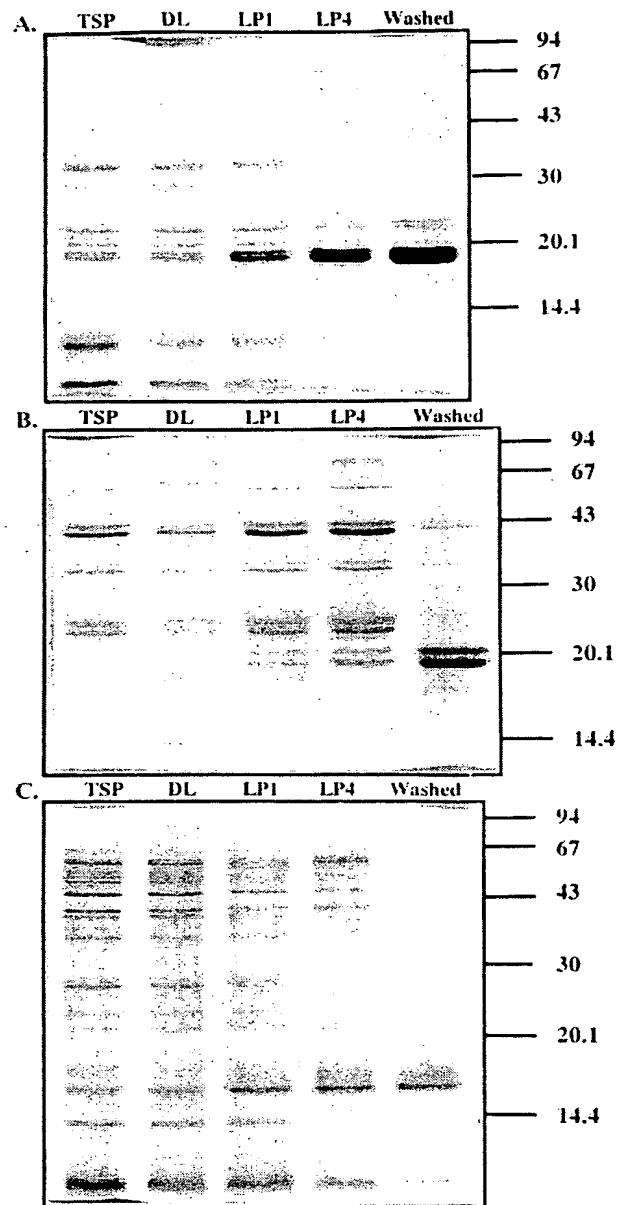


FIGURE 2



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FIGURE 3

ClustalW Formatted Alignments

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TR      10      20      30      40      50      60
ATTHIREDB ATGAA TGGT CTCTG AAACTCACAACA CAAGGCTCTGTATCGTAGGAAGTGGCCAGCGGCA
ATGAA TGGT CTCTG AAACTCACAACA CAAGGCTCTGTATCGTAGGAAGTGGCCAGCGGCA

TR      70      80      90      100     110     120
ATTHIREDB CACACGGCGGCGATTACGCAGCTAGGGCTGAACCTAAACCCTCTCTTCGAAAGGATGG
CACACGGCGGCGATTACGCAGCTAGGGCTGAACCTAAACCCTCTCTTCGAAAGGATGG

TR      130     140     150     160     170     180
ATTHIREDB ATGGCTAACGACATCGCTCCGGTGGTCAACTAA CAACCA C C CBA CGTC GAGAATTTC
ATGGCTAACGACATCGCTCCGGTGGTCAACTAA CAACCA C C CBA CGTC GAGAATTTC

TR      190     200     210     220     230     240
ATTHIREDB CCGGATTTCAGAAAGGTAATCTCGGAGTAGAGCTCACTGACAAATTCGTAACAATCG
CCGGATTTCAGAAAGGTAATCTCGGAGTAGAGCTCACTGACAAATTCGTAACAATCG

TR      250     260     270     280     290     300
ATTHIREDB GAGCGATTTCGGTACTACGATATTTACAGAGACGGTGACGAAAGTCGATTTCTCTTCGAAA
GAGCGATTTCGGTACTACGATATTTACAGAGACGGTGACGAAAGTCGATTTCTCTTCGAAA

TR      310     320     330     340     350     360
ATTHIREDB CCGTTTAAGCTATTACAGATTCAAAAAGCCATTCTCGCTGACGCTGTGATTCTCGCTATC
CCGTTTAAGCTATTACAGATTCAAAAAGCCATTCTCGCTGACGCTGTGATTCTCGCTATC

TR      370     380     390     400     410     420
ATTHIREDB CGAGCTGTGGCTAAGTGGCTTAGCTTCGTTGGATCTGGTGAAGTTC TGGAGGTTTC TGG
GGA GCTGTGGCTAAGTGGCTTAGCTTCGTTGGATCTGGTGAAGTTC TGGAGGTTTC TGG

TR      430     440     450     460     470     480
ATTHIREDB AACCGTGGAAATCTCCGCTTGTGCTGTTTGCAGCGGAGCTGCTCCGATATTCGCT AACCAA
AACCGTGGAAATCTCCGCTTGTGCTGTTTGCAGCGGAGCTGCTCCGATATTCGCT AACCAA

TR      490     500     510     520     530     540
ATTHIREDB CCTCTTGGCGGTGATCGGTGGAGGCGATTCTGCAATGGAAAGAAAGCAAACTTTCTTACAAA
CCTCTTGGCGGTGATCGGTGGAGGCGATTCTGCAATGGAAAGAAAGCAAACTTTCTTACAAA

TR      550     560     570     580     590     600
ATTHIREDB TATGGATCTAAAAGTGTATAAATCTATAGGAGAGATGCTTTTAAAGCGCTTAAGATTATG
TATGGATCTAAAAGTGTATAAATCTATAGGAGAGATGCTTTTAAAGCGCTTAAGATTATG

TR      610     620     630     640     650     660
ATTHIREDB CAGCAGCGAGCTTTGCTAAATCCTAAGAATTGATGTGATTGGAACTCGTCTGTTGTGGAA
CAGCAGCGAGCTTTGCTAAATCCTAAGAATTGATGTGATTGGAACTCGTCTGTTGTGGAA

TR      670     680     690     700     710     720
ATTHIREDB GCTTATGGA GATGGAGAAAGAGATGTGCTTGGAGGATGAAAGTGAAGAAATGTGGTTACC
GCTTATGGA GATGGAGAAAGAGATGTGCTTGGAGGATGAAAGTGAAGAAATGTGGTTACC

TR      730     740     750     760     770     780
ATTHIREDB GGA GATGTTTCTGATTAAAAAGTTCTGGATTGTCTTTGCTATTGGTCAATGAGCCAGCT
GGA GATGTTTCTGATTAAAAAGTTCTGGATTGTCTTTGCTATTGGTCAATGAGCCAGCT

TR      790     800     810     820     830     840
ATTHIREDB ACCAAGTTTTTGGATGGTGGTGTGAGTTAGATTGGATGGTTATGTTGTCAAGAGCCT
ACCAAGTTTTTGGATGGTGGTGTGAGTTAGATTGGATGGTTATGTTGTCAAGAGCCT

TR      850     860     870     880     890     900
ATTHIREDB GGTACTACACAGACTAGCGTCCCGGAGTTTTCGCTGCGGGTGATGTTCAAGGATAAGAAAG
GGTACTACACAGACTAGCGTCCCGGAGTTTTCGCTGCGGGTGATGTTCAAGGATAAGAAAG

TR      910     920     930     940     950     960
ATTHIREDB TATAGGCAAGCCATCACTGCTGCAGGAACCTGGGTGCATGGCAGCTTTGGATGCAAGAGCAT
TATAGGCAAGCCATCACTGCTGCAGGAACCTGGGTGCATGGCAGCTTTGGATGCAAGAGCAT

TR      970     980     990     1000    1010    1020
ATTHIREDB TACTTACAAAGAGATTGGATCTCAGCAAGGTAAGAGTGATTGA
TACTTACAAAGAGATTGGATCTCAGCAAGGTAAGAGTGATTGA

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FIGURE 4

1	ATG	AAT	GGT	CTC	GAA	ACT	CAC	AAC	ACA	AGG	CTC	TGT	ATC	GTA	GGA	AGT	GGC	CCA	GCG	GCA	60
1	M	N	G	L	E	T	H	N	T	R	L	C	I	V	G	S	G	P	A	A	20
61	CAC	ACG	GCG	GCG	ATT	TAC	GCA	GCT	AGG	GCT	GAA	CTT	AAA	CCT	CTT	CTC	TTC	GAA	GGA	TGG	120
21	H	T	A	A	I	Y	A	A	R	A	E	L	K	P	L	L	F	E	G	W	40
121	ATG	GCT	AAC	GAC	ATC	GCT	CCC	GGT	GGT	CAA	CTA	ACA	ACC	ACC	ACC	GAC	GTC	GAG	AAT	TTC	180
41	M	A	N	D	I	A	P	G	G	Q	L	T	T	T	T	D	V	E	N	F	60
181	CCC	GGA	TTT	CCA	GAA	GGT	ATT	CTC	GGA	GTA	GAG	CTC	ACT	GAC	AAA	TTC	CGT	AAA	CAA	TCG	240
61	P	G	F	P	E	G	I	L	G	V	E	L	T	D	K	F	R	K	Q	S	80
241	GAG	CGA	TTC	GGT	ACT	ACG	ATA	TTT	ACA	GAG	ACG	GTG	ACG	AAA	GTC	GAT	TTC	TCT	TCG	AAA	300
81	E	R	F	G	T	T	I	F	T	E	T	V	T	K	V	D	F	S	S	K	100
301	CCG	TTT	AAG	CTA	TTC	ACA	GAT	TCA	AAA	GCC	ATT	CTC	GCT	GAC	GCT	GTG	ATT	CTC	GCT	ACT	360
101	P	F	K	L	F	T	D	S	K	A	I	L	A	D	A	V	I	L	A	T	120
361	GGA	GCT	GTG	GCT	AAG	CGG	CTT	AGC	TTC	GTT	GGA	TCT	GGT	GAA	GGT	TCT	GGA	GGT	TTC	TGG	420
121	G	A	V	A	K	R	L	S	F	V	G	S	G	E	G	S	G	G	F	W	140
421	AAC	CGT	GGA	ATC	TCC	GCT	TGT	GCT	GTT	TGC	GAC	GGA	GCT	GCT	CCG	ATA	TTC	CGT	AAC	AAA	480
141	N	R	G	I	S	A	C	A	V	C	D	G	A	A	P	I	F	R	N	K	160
481	CCT	CTT	GCG	GTG	ATC	GGT	GGA	GGC	GAT	TCA	GCA	ATG	GAA	GAA	GCA	AAC	TTT	CTT	ACA	AAA	540
161	P	L	A	V	I	G	G	G	D	S	A	M	E	E	A	N	F	L	T	K	180
541	TAT	GGA	TCT	AAA	GTG	TAT	ATA	ATC	CAT	AGG	AGA	GAT	GCT	TTT	AGA	GCG	TCT	AAG	ATT	ATG	600
181	Y	G	S	K	V	Y	I	I	H	R	R	D	A	F	R	A	S	K	I	M	200
601	CAG	CAG	CGA	GCT	TTG	TCT	AAT	CCT	AAG	ATT	GAT	GTG	ATT	TGG	AAC	TCG	TCT	GTT	GTG	GAA	660
201	Q	Q	R	A	L	S	N	P	K	I	D	V	I	W	N	S	S	V	V	E	220
661	GCT	TAT	GGA	GAT	GGA	GAA	AGA	GAT	GTG	CTT	GGA	GGA	TTG	AAA	GTG	AAG	AAT	GTG	GTT	ACC	720
221	A	Y	G	D	G	E	R	D	V	L	G	G	L	K	V	K	N	V	V	T	240
721	GGA	GAT	GTT	TCT	GAT	TTA	AAA	GTT	TCT	GGA	TTG	TTC	TTT	GCT	ATT	GGT	CAT	GAG	CCA	GCT	780
241	G	D	V	S	D	L	K	V	S	G	L	F	F	A	I	G	H	E	P	A	260
781	ACC	AAG	TTT	TTG	GAT	GGT	GGT	GTT	GAG	TTA	GAT	TCG	GAT	GGT	TAT	GTT	GTC	ACG	AAG	CCT	840
261	T	K	F	L	D	G	G	V	E	L	D	S	D	G	Y	V	V	T	K	P	280
841	GGT	ACT	ACA	CAG	ACT	AGC	GTT	CCC	GGA	GTT	TTC	GCT	GCG	GGT	GAT	GTT	CAG	GAT	AAG	AAG	900
281	G	T	T	Q	T	S	V	P	G	V	F	A	A	G	D	V	Q	D	K	K	300
901	TAT	AGG	CAA	GCC	ATC	ACT	GCT	GCA	GGA	ACT	GGG	TGC	ATG	GCA	GCT	TTG	GAT	GCA	GAG	CAT	960
301	Y	R	Q	A	I	T	A	A	G	T	G	C	M	A	A	L	D	A	E	H	320
961	TAC	TTA	CAA	GAG	ATT	GGA	TCT	CAG	CAA	GGT	AAG	AGT	GAT	TGA							1002
321	Y	L	Q	E	I	G	S	Q	Q	G	K	S	D	*							334

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FIGURE 5

ClustalW Formatted Alignments

Translation of ATTHIREDB
Translation of TR

Translation of ATTHIREDB
Translation of TR

Translation of ATTHIREDB
Translation of TR

Translation of ATTHIREDB
Translation of TR

Translation of ATTHIREDB
Translation of TR

Translation of ATTHIREDB
Translation of TR

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FIGURE 6

PstI

1 ctgcaggaattcattgtactcccagtatcattatagtgaaagtttggctctctcgcgggtggttttttacctctattta 80

81 aaggggttttccacctaaaaattctggtatcattctcactttacttggtactttaatttctcataatctttggttgaaat 160

161 tatcacgcttccgcacacgatatccctacaaatttattatttgttaaacattttcaaaccgcataaaattttatgaagtc 240

241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcggtggtagaaagcataa 320

321 tgattttattcttattcttcttcatataaatgtttaatatatacaataataaacaattctttaccttaagaaggatttcccat 400

401 tttatattttaaaaatatatttatcaaatatttttcaaccacgtaaatctcataataataagttgtttcaaaagtaataa 480

481 aatttaactccataatttttttattogactgatcttaagcaacacccagtgacacaactagccatttttttctttgaat 560

561 aaaaaaatccaattatcattgtattttttttatacaatgaaaatttcaccaaacaatcatttgggtatttctgaagcaa 640

641 gtcattgttatgcaaaattctataattcccatgtgacactacggaagtaactgaagatctgcttttacatgcgagacacat 720

721 cttctaaagtaattttaataatagttactatattcaagatttcatatatcaaatactcaatattacttctaaaaaattaa 800

801 ttagatataatttaaatattacttttttaattttaagtttaattgttgaaatttgtagactattgatttattattctactat 880

881 gtttaaatgtttttatagatagtttaagtaaatataagtaatgtagtagagtgtagagtggtaccctaaaccataaac 960

961 tataagattttatggtggactaattttcatatatttcttattgcttttaccttttcttggtatgtaagtcggaactggaa 1040

1041 ttactgtgggttgccatggcactctgtggtcttttggttcattgcatggatgcttgcgcaagaaaaagacaaagaacaaag 1120

1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200

1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcactttaaatggctcaccatctcaaccacacaca 1280

1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttcgccacctcaatttcttcaatt 1360

1361 caacacacgtcaacctgcatatgcgtgtcatcccatgccccaaatctccatgcatgttccaaccaccttctctcttatata 1440

1441 atacctataaaatacctctaataatcactcacttctttcatcatccatccatccagagtactactactactactataata 1520

1521 ccccaacccaactcatattcaatactactctact ATG GCT TCG GAA GAA GGA CAA GTG ATC GCC TGC 1587

1 M A S E E G Q V I A C 11

1588 CAC ACC GTT GAG ACA TGG AAC GAG CAG CTT CAG AAG GCT AAT GAA TCC AAA ACT CTT GTG 1647

12 H T V E T W N E Q L Q K A N E S K T L V 31

1648 GTG GTT GAT TTC ACG GCT TCT TGG TGT GGA CCA TGT CGT TTC ATC GCT CCA TTC TTT GCT 1707

32 V V D F T A S W C G P C R F I A P F F A 51

1708 GAT TTG GCT AAG AAA CTT CCT AAC GTG CTT TTC CTC AAG GTT GAT ACT GAT GAA TTG AAG 1767

52 D L A K K L P N V L F L K V D T D E L K 71

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FIGURE 6 (CONT'D)

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1768 TCG GTG GCA AGT GAT TGG GCG ATA CAG GCG ATG CCA ACC TTC ATG TTT TTG AAG GAA GGG 1827
    72 S V A S D W A I Q A M P T F M F L K E G 91

1828 AAG ATT TTG GAC AAA GTT GTT GGA GCC AAG AAA GAT GAG CTT CAG TCT ACC ATT GCC AAA 1887
    92 K I L D K V V G A K K D E L Q S T I A K 111
        HindIII
1888 CAC TTG GCT TAA gcttaataagtatgaactaaaatgcatgtaggtgaagagctcatggagagcatggaatattgt 1963
    112 H L A * 115

1964 atccgaccatgtaacagtataataaactgagctccatctcacttcttctatgaataaacaaggatgttatgatatattaa 2043

2044 cactctatctatgcacottattgttctatgataaatttcctcttattattataaatcatctgaatcgtgacggcttatgg 2123

2124 aatgcttcaaatagtacaaaaaacaatgtgtactataagactttctaaacaattctaacttttagcattgtgaacgagaca 2203

2204 taagtgttaagaagacataacaattataatggaagaagtttgtctccatttatataattatataactaccacttatgtatt 2283

2284 atattaggtatgtaaggagacataacaattataaagagagaagtttgtatccatttatataattatataactaccatttat 2363

2364 atattatacttatccacttatttaagtgtctttataagggttgatccatgatatttctaataatttttagttgatatgtatat 2443

2444 gaaagggactattttgaactctcttactctgtataaagggttgatcatccttaaagtgggtctatttaattttattgtctt 2523

2524 cttacagataaaaaaaaaaattatgagttgggttgataaaatattgaaggatttaaaataataataaataataaataacat 2603

2604 ataatatatgtatatataaatttattataatataacatttatctataaaaaagtaaatattgtcataaatctatacaatcgt 2683

2684 ttagccttgctggacgactctcaattatttaaacgagagtaaacatatattgactttttgggttatttaacaaattattatt 2763

2764 taacactatatgaaattttttttttttatcggcaaggaaataaaattaaattaggagggacaatgggtgtgtcccaatcct 2843

2844 tataacaaccaacttccacaggaaggtcaggtcggggacaacaaaaaacaggcaagggaattttttaatttggttgctc 2923

2924 ttgtttgctgcataatttatgcagtaaaacactacacataacccttttagcagtagagcaatgggttgaccgtgtgcttag 3003

3004 cttcttttatttttattttttttatcagcaagaataaaataaaataaaatgagacacttcagggatgtttcaacccttatac 3083

3084 aaaacccccaaaaacaagtttcctagcacccctaccaactaaggtacc 3129

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KpnI

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FIGURE 7

PstI

1 ctgcaggaattcattgtactccagtatcattatagtgaaagtttggctctctcgccgggtggtttttacctctattta 80

81 aaggggttttccacctaaaaattctgggtatcattctcactttacttggtactttaatttctcataatctttgggtgaaat 160

161 tatcacgcttccgcacacgatatccctacaaaatttattatttggttaaacattttcaaaccgcataaaattttatgaagtc 240

241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcgttggtagaagcataa 320

321 tgatttattcttattcttcttcatataaatgtttaatatataataaacaattctttaccttaagaaggatttcccat 400

401 tttatattttaaaaaatataatttatcaaataattttcaaccacgtaaattctcataataataagttgtttcaaaagtaataa 480

481 aatttaactccataatttttttattcgactgatcttaaaagcaacaccagtgacacaactagccatttttttctttgaat 560

561 aaaaaaatccaattatcattgtatttttttatacaatgaaaatttcaccaaacaatcatttgggtatttctgaagcaa 640

641 gtcattgttatgcaaaattctataattccatttgacactacggaagtaactgaagatctgcttttacatgcgagacacat 720

721 cttctaaagtaattttaataatagttactatattcaagatttcatatatcaataactcaatattacttctaaaaaattaa 800

801 ttagatataaataaaatattacttttttaattttaagtttaattgttggaattgtgactattgatttattattctactat 880

881 gtttaaatgttttatagatagtttaagtaaatataagtaatgtagtagagtgttagagtgttaccctaaccataaac 960

961 tataagatttatgggtggactaattttcatatatattcttattgcttttaccttttcttgggtatgtaagtcgtaactggaa 1040

1041 ttactgtgggttgccatggcactctgtgggtcttttggttcatgcatggatgcttgcgcaagaaaaagacaaagaacaaag 1120

1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200

1201 catgtatgtctaaatgccatgcaaaagcaacacgtgcttaacatgcactttaaatgggtcaccatctcaaccacacaca 1280

1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttccgccacctcaatttcttcaatt 1360

1361 caacacacgtcaacctgcatatgcgtgtcatcccatgcccaaatctccatgcatgttccaaccaccttctctcttatata 1440

1441 atacctataaataacctctaataatcactcacttctttcatcatccatccatccagagtactactactctactactataata 1520

1521 ccccaaccaactcatattcaataactactctact ATG GCG GAT ACA GCT AGA GGA ACC CAT CAC GAT 1587

1 M A D T A R G T H H D 11

1588 ATC ATC GGC AGA GAC CAG TAC CCG ATG ATG GGC CGA GAC CGA GAC CAG TAC CAG ATG TCC 1647

12 I I G R D Q Y P M M G R D R D Q Y Q M S 31

1648 GGA CGA GGA TCT GAC TAC TCC AAG TCT AGG CAG ATT GCT AAA GCT GCA ACT GCT GTC ACA 1707

32 G R G S D Y S K S R Q I A K A A T A V T 51

1708 GCT GGT GGT TCC CTC CTT GTT CTC TCC AGC CTT ACC CTT GTT GGA ACT GTC ATA GCT TTG 1767

52 A G G S L L V L S S L T L V G T V I A L 71

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FIGURE 7 (CONT'D)

1768 ACT GTT GCA ACA CCT CTG CTC GTT ATC TTC AGC CCA ATC CTT GTC CCG GCT CTC ATC ACA 1827
72 T V A T P L L V I F S P I L V P A L I T 91

1828 GTT GCA CTC CTC ATC ACC GGT TTT CTT TCC TCT GGA GGG TTT GGC ATT GCC GCT ATA ACC 1887
92 V A L L I T G F L S S G G F G I A A I T 111

1888 GTT TTC TCT TGG ATT TAC AA gtaagcacacatttatcatcttacttcataaattttgtgcaatatgtgcatgca 1960
112 V F S W I Y K 118

1961 tgtgttgagccagtagctttggatcaatttttttggtcgaataacaaatgtaacaataagaaattgcaaattctagggaa 2040

2041 catttgggttaactaaatacgaattttgacctagctagcttgaatgtgtctgtgttatatcatctatataggtaaaaatgctt 2120

2121 ggtatgatacctattgattgtgaatag G TAC GCA ACG GGA GAG CAC CCA CAG GGA TCA GAC AAG 2184
119 Y A T G E H P Q G S D K 130

2185 TTG GAC AGT GCA AGG ATG AAG TTG GGA AGC AAA GCT CAG GAT CTG AAA GAC AGA GCT CAG 2244
131 L D S A R M K L G S K A Q D L K D R A Q 150

2245 TAC TAC GGA CAG CAA CAT ACT GGT GGG GAA CAT GAC CGT GAC CGT ACT CGT GGT GGC CAG 2304
151 Y Y G Q Q H T G G E H D R D R T R G G Q 170

NcoI

2305 CAC ACT ACC ATG GCT TCG GAA GAA GGA CAA GTG ATC GCC TGC CAC ACC GTT GAG ACA TGG 2364
171 H T T M A S E E G Q V I A C H T V E T W 190

2365 AAC GAG CAG CTT CAG AAG GCT AAT GAA TCC AAA ACT CTT GTG GTG GTT GAT TTC ACG GCT 2424
191 N E Q L Q K A N E S K T L V V V D F T A 210

2425 TCT TGG TGT GGA CCA TGT CGT TTC ATC GCT CCA TTC TTT GCT GAT TTG GCT AAG AAA CTT 2484
211 S W C G P C R F I A P F F A D L A K K L 230

2485 CCT AAC GTG CTT TTC CTC AAG GTT GAT ACT GAT GAA TTG AAG TCG GTG GCA AGT GAT TGG 2544
231 P N V L F L K V D T D E L K S V A S D W 250

2545 GCG ATA CAG GCG ATG CCA ACC TTC ATG TTT TTG AAG GAA GGG AAG ATT TTG GAC AAA GTT 2604
251 A I Q A M P T F M F L K E G K I L D K V 270

2605 GTT GGA GCC AAG AAA GAT GAG CTT CAG TCT ACC ATT GCC AAA CAC TTG GCT TAA gcttaata 2666
271 V G A K K D E L Q S T I A K H L A * 288

2667 agtatgaactaaaatgcatgtagggtgaagagctcatggagagcatggaatattgtatccgaccatgtaacagtataata 2746

2747 actgagctccatctcacttcttctatgaataaacaaggatgttatgatatattaacactctatctatgcaccttattgt 2826

2827 tctatgataaatttctcttattattataaatcatctgaatcgtagcggcttatggaatgcttcaaatagtacaaaaaca 2906

2907 aatgtgtactataagacttttctaacaattctaacttttagcattgtgaacgagacataagtgttaagaagacataacaat 2986

2987 tataatggaagaagtttgtctccatttatattatattatattaccacttatgtattatattaggtatgtaaggagacata 3066

00007000 00000000

Questions **A**nswers

KpnI

[illegible]

PstI

1 ctgcaggaattcattgtactcccagtatcatttatagtgaaagtttttggtctctctcgccggtgggttttttacctctatttta 80

81 aagggggttttccacctaaaaattctggtatcattctcactttacttggtactttaattttctcataatctttgggtgaaat 160

161 tatcacgcttccgcacacgatatccctacaaatttattatttggttaaacttttcaaacgcataaaaattttatgaagtc 240

241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcggttggtagaaagcataa 320

321 tgattttattcttattcttcttcatataaatgtttaatatatacaataataacaaattctttaccttaagaaggatttcccat 400

401 tttatattttaaaaaatatatttatcaaatatttttcaaccacgtaaatctcataataataagttgtttcaaaagtaataa 480

481 aatttaactccataatttttttattcgactgatcttaaagcaacaccagtgacacaactagccatttttttctttgaat 560

561 aaaaaaatccaattatcattgtattttttttatacaatgaaaatttcaccaaacaatcatttgggtatttctgaagcaa 640

641 gtcattgttatgcaaaattctataattcccatttgacactacggaagtaactgaagatctgcttttacatgcgagacacat 720

721 cttctaaagtaattttaataatagttacttatattcaagatttcatatatcaaatactcaatattacttctaaaaaattaa 800

801 ttagatataattaaaaatattacttttttaattttaagtttaattgttggaatttgtgactattgatttatttctactat 880

881 gtttaaattgttttatagatagtttaaagtaaatataagtaatgtagtagagtgttagagtgttacctaaccataaac 960

961 tataagattttatgggtggactaattttcatatatttcttattgctttttaccttttcttggtatgtaagtcgtaactggaa 1040

1041 ttactgtgggttgccatggcactctgtgggtcttttggttcattgcatggatgcttgcgcaagaaaaagacaaagaacaaaag 1120

1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaatttagtactggctgatcaagatcgccgcgtc 1200

1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcacttttaaatggctcacccatctcaaccacacaca 1280

1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttccgccacctcaatttcttctactt 1360

1361 caacacacgtcaacctgcatatgcgtgtcatcccatgccc aaatctccatgcatgttccaaccaccttctctcttatata 1440

1441 atacctataaataacctctaataatcactcacttctttcatcatccatccatccagagtactactactctactactataata 1520

1521 ccccaacccaactcatattcaatactactctact ATG GCT TCG GAA GAA GGA CAA GTG ATC GCC TGC 1587

1 M A S E E G Q V I A C 11

1588 CAC ACC GTT GAG ACA TGG AAC GAG CAG CTT CAG AAG GCT AAT GAA TCC AAA ACT CTT GTG 1647

12 H T V E T W N E Q L Q K A N E S K T L V 31

1648 GTG GTT GAT TTC ACG GCT TCT TGG TGT GGA CCA TGT CGT TTC ATC GCT CCA TTC TTT GCT 1707

32 V V D F T A S W C G P C R F I A P F F A 51

1708 GAT TTG GCT AAG AAA CTT CCT AAC GTG CTT TTC CTC AAG GTT GAT ACT GAT GAA TTG AAG 1767

52 D L A K K L P N V L F L K V D T D E L K 71

1768	TCG	GTG	GCA	AGT	GAT	TGG	GCG	ATA	CAG	GCG	ATG	CCA	ACC	TTC	ATG	TTT	TTG	AAG	GAA	GGG		1827
72	S	V	A	S	D	W	A	I	Q	A	M	P	T	F	M	F	L	K	E	G		91
1828	AAG	ATT	TTG	GAC	AAA	GTT	GTT	GGA	GCC	AAG	AAA	GAT	GAG	CTT	CAG	TCT	ACC	ATT	GCC	AAA		1887
92	K	I	L	D	K	V	V	G	A	K	K	D	E	L	Q	S	T	I	A	K		111
1888	CAC	TTG	GCT	ATG	GCG	GAT	ACA	GCT	AGA	GGA	ACC	CAT	CAC	GAT	ATC	ATC	GGC	AGA	GAC	CAG		1947
112	H	L	A	M	A	D	T	A	R	G	T	H	H	D	I	I	G	R	D	Q		131
1948	TAC	CCG	ATG	ATG	GGC	CGA	GAC	CGA	GAC	CAG	TAC	CAG	ATG	TCC	GGA	CGA	GGA	TCT	GAC	TAC		2007
132	Y	P	M	M	G	R	D	R	D	Q	Y	Q	M	S	G	R	G	S	D	Y		151
2008	TCC	AAG	TCT	AGG	CAG	ATT	GCT	AAA	GCT	GCA	ACT	GCT	GTC	ACA	GCT	GGT	GGT	TCC	CTC	CTT		2067
152	S	K	S	R	Q	I	A	K	A	A	T	A	V	T	A	G	G	S	L	L		171
2068	GTT	CTC	TCC	AGC	CTT	ACC	CTT	GTT	GGA	ACT	GTC	ATA	GCT	TTG	ACT	GTT	GCA	ACA	CCT	CTG		2127
172	V	L	S	S	L	T	L	V	G	T	V	I	A	L	T	V	A	T	P	L		191
2128	CTC	GTT	ATC	TTC	AGC	CCA	ATC	CTT	GTC	CCG	GCT	CTC	ATC	ACA	GTT	GCA	CTC	CTC	ATC	ACC		2187
192	L	V	I	F	S	P	I	L	V	P	A	L	I	T	V	A	L	L	I	T		211
2188	GGT	TTT	CTT	TCC	TCT	GGA	GGG	TTT	GGC	ATT	GCC	GCT	ATA	ACC	GTT	TTC	TCT	TGG	ATT	TAC		2247
212	G	F	L	S	S	G	G	F	G	I	A	A	I	T	V	F	S	W	I	Y		231
2248	AA	<i>gtaagcacacatttatcatcttacttcataattttgtgcgaatatgtgcatgcatgtgttgagccagtagcctttggat</i>																			2326	
232	K																				232	
2327	<i>caatttttttggtcgaataacaaatgtaacaataagaaattgcaaattctagggaacatttggttaactaaatacgaaat</i>																				2406	
2407	<i>ttgacctagctagccttgaatgtgtctgtgtatatcatctatataggtaaaatgcttgggatgatacctattgatttgtgaa</i>																				2486	
2487	tag	G	TAC	GCA	ACG	GGA	GAG	CAC	CCA	CAG	GGA	TCA	GAC	AAG	TTG	GAC	AGT	GCA	AGG	ATG		2544
233			Y	A	T	G	E	H	P	Q	G	S	D	K	L	D	S	A	R	M		250
2545	AAG	TTG	GGA	AGC	AAA	GCT	CAG	GAT	CTG	AAA	GAC	AGA	GCT	CAG	TAC	TAC	GGA	CAG	CAA	CAT		2604
251	K	L	G	S	K	A	Q	D	L	K	D	R	A	Q	Y	Y	G	Q	Q	H		270
																					HindIII	
2605	ACT	GGT	GGG	GAA	CAT	GAC	CGT	GAC	CGT	ACT	CGT	GGT	GGC	CAG	CAC	ACT	ACT	TAA	<u>gcttaata</u>		2666	
271	T	G	G	E	H	D	R	D	R	T	R	G	G	Q	H	T	T	*			288	
2667	<i>agtatgaactaaaaatgcatgtagggtgaagagctcatggagagcatggaatattgtatccgaccatgtaacagtataata</i>																				2746	
2747	<i>actgagctccatctcacttcttcttatgaataaaciaaggatgttatgatataattaacactctatctatgcacettattgt</i>																				2826	
2827	<i>tctatgataaaatttctcttattattataaatcatctgtaatcgtgacggcttatggaatgcttcaaatagtacaaaaaca</i>																				2906	
2907	<i>aatgtgtactataagactttctaacaattctaactttagcattgtgaaacgagacataagtgttaagaagacataacaat</i>																				2986	
2987	<i>tataatggaagaagtttgtctccatttatatatattatatattaccacattatgtattatatattaggatgttaaaggagacata</i>																				3066	

[illegible]

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FIGURE 9

PstI

1 ctgcaggaattcattgtactcccagtatcattatagtgaaagttttggctctctcgccggtgggttttttacctctattta 80

81 aaggggttttccacctaaaaattctgggtatcattctcactttacttgttactttaatttctcataatctttgggtgaaat 160

161 tatcacgcttccgcacacgatatccctacaaatttattatttgttaaacattttcaaaccgcataaaaattttatgaagtc 240

241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcgttggtagaagcataa 320

321 tgatttattcttattcttcttcatataaatgtttaatatataaaacaaattctttaccttaagaaggatttcccat 400

401 tttatatattttaaaaatatatttatcaaataatttttcaaccacgtaaatctcataataataagttgtttcaaaagtaataa 480

481 aatttaactccataatttttttattcgactgatcttaaagcaacaccagtgacacaaactagccatttttttctttgaat 560

561 aaaaaaatccaattatcattgtatttttttatacaatgaaaatttcaccaaacaatcatttgggtatttctgaagcaa 640

641 gtcattgttatgcaaaattctataattcccatttgacactacggaagtaactgaagatctgcttttacatgcgagacacat 720

721 cttctaaagtaattttaataatagttactatattcaagatttcatatatcaaatactcaatattacttctaaaaaattaa 800

801 ttagatataattaaaatattacttttttaattttaagtttaattgttgaatttgtgactattgatttattattctactat 880

881 gtttaaattgttttatagatagtttaaagtaaatataagtaatgtagtagagtgttagagtgttaccctaaccataaac 960

961 tataagatttatgggtggactaattttcatatatttcttatttgcttttaccttttcttggtatgtaagtcgcgaactggaa 1040

1041 ttactgtgggttgccatggcactctgtggtcttttgggtcatgcatggatgcttgcgcaagaaaaagacaaagaacaaag 1120

1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200

1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcactttaaatggctcacccatctcaaccacacaca 1280

1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttccgccacctcaatttcttctactt 1360

1361 caacacacgtcaacctgcatatgcgtgtcatcccatgccc aaatctccatgcatgttccaaccaccttctctcttatata 1440

1441 atacctataaaatacctctaataatcactcacttctttcatcatccatccatccagagtactactactctactactataata 1520

1521 ccccaaccctaactcatattcaatactactctact ATG AAT GGT CTC GAA ACT CAC AAC ACA AGG CTC 1587

1 M N G L E T H N T R L 11

1588 TGT ATC GTA GGA AGT GGC CCA GCG GCA CAC ACG GCG GCG ATT TAC GCA GCT AGG GCT GAA 1647

12 C I V G S G P A A H T A A I Y A A R A E 31

1648 CTT AAA CCT CTT CTC TTC GAA GGA TGG ATG GCT AAC GAC ATC GCT CCC GGT GGT CAA CTA 1707

32 L K P L L F E G W M A N D I A P G G Q L 51

1708 ACA ACC ACC ACC GAC GTC GAG AAT TTC CCC GGA TTT CCA GAA GGT ATT CTC GGA GTA GAG 1767

52 T T T T D V E N F P G F P E G I L G V E 71

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FIGURE 9 (CONT'D)

1768 CTC ACT GAC AAA TTC CGT AAA CAA TCG GAG CGA TTC GGT ACT ACG ATA TTT ACA GAG ACG 1827
72 L T D K F R K Q S E R F G T T I F T E T 91

1828 GTG ACG AAA GTC GAT TTC TCT TCG AAA CCG TTT AAG CTA TTC ACA GAT TCA AAA GCC ATT 1887
92 V T K V D F S S K P F K L F T D S K A I 111

1888 CTC GCT GAC GCT GTG ATT CTC GCT ACT GGA GCT GTG GCT AAG CGG CTT AGC TTC GTT GGA 1947
112 L A D A V I L A T G A V A K R L S F V G 131

1948 TCT GGT GAA GGT TCT GGA GGT TTC TGG AAC CGT GGA ATC TCC GCT TGT GCT GTT TGC GAC 2007
132 S G E G S G G F W N R G I S A C A V C D 151

2008 GGA GCT GCT CCG ATA TTC CGT AAC AAA CCT CTT GCG GTG ATC GGT GGA GGC GAT TCA GCA 2067
152 G A A P I F R N K P L A V I G G G D S A 171

2068 ATG GAA GAA GCA AAC TTT CTT ACA AAA TAT GGA TCT AAA GTG TAT ATA ATC CAT AGG AGA 2127
172 M E E A N F L T K Y G S K V Y I I H R R 191

2128 GAT GCT TTT AGA GCG TCT AAG ATT ATG CAG CAG CGA GCT TTG TCT AAT CCT AAG ATT GAT 2187
192 D A F R A S K I M Q Q R A L S N P K I D 211

2188 GTG ATT TGG AAC TCG TCT GTT GTG GAA GCT TAT GGA GAT GGA GAA AGA GAT GTG CTT GGA 2247
212 V I W N S S V V E A Y G D G E R D V L G 231

2248 GGA TTG AAA GTG AAG AAT GTG GTT ACC GGA GAT GTT TCT GAT TTA AAA GTT TCT GGA TTG 2307
232 G L K V K N V V T G D V S D L K V S G L 251

2308 TTC TTT GCT ATT GGT CAT GAG CCA GCT ACC AAG TTT TTG GAT GGT GGT GTT GAG TTA GAT 2367
252 F F A I G H E P A T K F L D G G V E L D 271

2368 TCG GAT GGT TAT GTT GTC ACG AAG CCT GGT ACT ACA CAG ACT AGC GTT CCC GGA GTT TTC 2427
272 S D G Y V V T K P G T T Q T S V P G V F 291

2428 GCT GCG GGT GAT GTT CAG GAT AAG AAG TAT AGG CAA GCC ATC ACT GCT GCA GGA ACT GGG 2487
292 A A G D V Q D K K Y R Q A I T A A G T G 311

2488 TGC ATG GCA GCT TTG GAT GCA GAG CAT TAC TTA CAA GAG ATT GGA TCT CAG CAA GGT AAG 2547
312 C M A A L D A E H Y L Q E I G S Q Q G K 331

2548 AGT GAT TGA agcttaataagtatgaactaaaatgcatgtaggtgtaagagctcatggagagcatggaatattgtatc 2624
332 S D * HindIII 334

2625 cgaccatgtaacagtataataaactgagctccatctcacttcttctatgaataaacaaggatggttatgatatattaacac 2704

2705 tctatctatgcaccttattgttctatgataaaatctcttattattataaaatcatctgaatcgtgacggccttatggaat 2784

2785 gcttcaaatagtacaaaaacaaatgtgtactataagacttttctaacaattctaaacttttagcattgtgaacgagacataa 2864

2865 gtgttaagaagacataacaattataatggaagaagtttgtctccatttatattatattatattaccacttatgtattata 2944

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FIGURE 9 (CONT'D)

2945 ttaggatgttaaggagacataacaattataaagagagaagtttgatccatttatattatataactacccatttatata 3024
3025 ttatacttatccacttatttaagtgtctttataaggtttgatccatgatatttctaataatttttagttgatatgtatatgaa 3104
3105 aggggtactatttgaactctcttactctgtataaagggttgatcatccttaaagtgggtctatttaattttattgcttctt 3184
3185 acagataaaaaaaaaattatgagttgggttgataaaatattgaaggatttaaataataataataataataacatata 3264
3265 atatatgtatataaaatttattataataataacatttatctataaaaaagtaaattgtgcataaatctatacaatcgttta 3344
3345 gccttgctggagcactctcaattatttaaacgagagtaaacatatttgactttttggttatttaacaaattattatttaa 3424
3425 cactatatgaaattttttttttttatcggaaggaaataaaattaaattaggagggacaatgggtgtgtoccaatccttat 3504
3505 acaaccaacttccacaggaagggtcaggtcggggacaacaaaaaacaggcaagggaatttttaatttgggtgtgtcttg 3584
3585 tttgctgcataatttatgcagtaaaacactacacataacccttttagcagtagagcaatgggttgaccgtgtgcttagctt 3664
3665 cttttattttatttttttatcagcaaagaataaaataaaataaaatgagacacttcagggatgtttcaacccttatacaaa 3744
3745 accccaaaaacaagtttccttagcacccctaccaactaaggtacc 3787

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PstI		
1	<u>ctgcagga</u> atttcattgtactcccagtatcattatagtgaaagttttggctctctcgccggtgggttttttacctctattta	80
81	aagggggttttccacctaaaaattctgggtatcattctcactttacttggtactttaattttctcataatctttgggtgaaat	160
161	tatcacgcttccgcacacgatatccctacaaatttattatttggttaaacattttcaaaccgcataaaattttatgaagtc	240
241	ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcggtggtagaaagcataa	320
321	tgatttattcttattcttcttcatataaatgtttaatatacaatataaacaattctttaccttaagaaggatttcccat	400
401	tttatattttaaaaatatatttatcaaataatttttcaaccacgtaaattctcataataataagttgtttcaaaagtaataa	480
481	aatttaactccataatttttttattcgactgatcttaaagcaacacccagtgacacaactagccatttttttctttgaat	560
561	aaaaaaatccaattatcattgtattttttttatacaatgaaaatttcaccaaacaatcatttgggtatttctgaagcaa	640
641	gtcatgttatgcaaaattctataattcccatattgacactacggaagtaactgaagatctgcttttacatgcgagacacat	720
721	cttctaagtaattttaataatagttactatatattcaagatttcatatatcaaatactcaatattacttctaaaaaattaa	800
801	ttagatataaattaaatattacttttttaattttaagtttaattgttggaatttgtgactattgatttatttctactat	880
881	gtttaaattgttttatagatagtttaaagtaaatataagtaaatgtagtagagtgttagagtgttacctaaccataaac	960
961	tataagatttatgggtggactaattttcatatatatttcttatttgcttttaccttttcttggtatgtaagtc	1040
1041	ttactgtgggttgccatggcactctgtgggtcttttgggttcatgcatggatgcttgcgcaagaaaagacaaagaacaaag	1120
1121	aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc	1200
1201	catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcactttaaatggctcacccatctcaaccacacaca	1280
1281	aacacattgccttttttcttcatcatcaccacaaccacctgtatatattcattctcttccgccacctcaatttcttcactt	1360
1361	caacacacgtcaacctgcataatgcgtgtcatcccatgcccaaattctcatgcattgtccaaccaccttctctcttatata	1440
1441	atacctataaaatacctctaataatcactcacttctttcatcatccatccatccagagtactactactctactactataata	1520
1521	ccccaacccaactcatattcaatactactctact	1587
1	ATG GCG GAT ACA GCT AGA GGA ACC CAT CAC GAT	11
	M A D T A R G T H H D	
1588	ATC ATC GGC AGA GAC CAG TAC CCG ATG ATG GGC CGA GAC CGA GAC CAG TAC CAG ATG TCC	1647
12	I I G R D Q Y P M M G R D R D Q Y Q M S	31
1648	GGA CGA GGA TCT GAC TAC TCC AAG TCT AGG CAG ATT GCT AAA GCT GCA ACT GCT GTC ACA	1707
32	G R G S D Y S K S R Q I A K A A T A V T	51
1708	GCT GGT GGT TCC CTC CTT GTT CTC TCC AGC CTT ACC CTT GTT GGA ACT GTC ATA GCT TTG	1767

FIGURE 10 (CONT'D)

52 A G G S L L V L S S L T L V G T V I A L 71

1768 ACT GTT GCA ACA CCT CTG CTC GTT ATC TTC AGC CCA ATC CTT GTC CCG GCT CTC ATC ACA 1827
72 T V A T P L L V I F S P I L V P A L I T 91

1828 GTT GCA CTC CTC ATC ACC GGT TTT CTT TCC TCT GGA GGG TTT GGC ATT GCC GCT ATA ACC 1887
92 V A L L I T G F L S S G G F G I A A I T 111

1888 GTT TTC TCT TGG ATT TAC AA *gtaagcacacatttatcatcttacttcataat* *tttgtgcaatatgtgcatgca* 1960
112 V F S W I Y K 118

1961 *tgtgttgagccagtagcctttggatcaat* *tttttttggtcgaataacaaatgtaacaataagaaattgcaaattctagggaa* 2040

2041 *catttgggttaactaaatacgaat* *ttgacctagctagcttgaatgtgtctgtgtatatcatctatataggtaaaaatgctt* 2120

2121 *gggatgatacctattgattgtgaatag* G TAC GCA ACG GGA GAG CAC CCA CAG GGA TCA GAC AAG 2184
119 Y A T G E H P Q G S D K 130

2185 TTG GAC AGT GCA AGG ATG AAG TTG GGA AGC AAA GCT CAG GAT CTG AAA GAC AGA GCT CAG 2244
131 L D S A R M K L G S K A Q D L K D R A Q 150

2245 TAC TAC GGA CAG CAA CAT ACT GGT GGG GAA CAT GAC CGT GAC CGT ACT CGT GGT GGC CAG 2304
151 Y Y G Q Q H T G G E H D R D R T R G G Q 170

2305 CAC ACT ACC ATG AAT GGT CTC GAA ACT CAC AAC ACA AGG CTC TGT ATC GTA GGA AGT GGC 2364
171 H T T M N G L E T H N T R L C I V G S G 190

2365 CCA GCG GCA CAC ACG GCG GCG ATT TAC GCA GCT AGG GCT GAA CTT AAA CCT CTT CTC TTC 2424
191 P A A H T A A I Y A A R A E L K P L L F 210

2425 GAA GGA TGG ATG GCT AAC GAC ATC GCT CCC GGT GGT CAA CTA ACA ACC ACC ACC GAC GTC 2484
211 E G W M A N D I A P G G Q L T T T T D V 230

2485 GAG AAT TTC CCC GGA TTT CCA GAA GGT ATT CTC GGA GTA GAG CTC ACT GAC AAA TTC CGT 2544
231 E N F P G F P E G I L G V E L T D K F R 250

2545 AAA CAA TCG GAG CGA TTC GGT ACT ACG ATA TTT ACA GAG ACG GTG ACG AAA GTC GAT TTC 2604
251 K Q S E R F G T T I F T E T V T K V D F 270

2605 TCT TCG AAA CCG TTT AAG CTA TTC ACA GAT TCA AAA GCC ATT CTC GCT GAC GCT GTG ATT 2664
271 S S K P F K L F T D S K A I L A D A V I 290

2665 CTC GCT ACT GGA GCT GTG GCT AAG CGG CTT AGC TTC GTT GGA TCT GGT GAA GGT TCT GGA 2724
291 L A T G A V A K R L S F V G S G E G S G 310

2725 GGT TTC TGG AAC CGT GGA ATC TCC GCT TGT GCT GTT TGC GAC GGA GCT GCT CCG ATA TTC 2784
311 G F W N R G I S A C A V C D G A A P I F 330

2785 CGT AAC AAA CCT CTT GCG GTG ATC GGT GGA GGC GAT TCA GCA ATG GAA GAA GCA AAC TTT 2844
331 R N K P L A V I G G G D S A M E E A N F 350

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FIGURE 10 (CONT'D)

2845 CTT ACA AAA TAT GGA TCT AAA GTG TAT ATA ATC CAT AGG AGA GAT GCT TTT AGA GCG TCT 2904
351 L T K Y G S K V Y I I H R R D A F R A S 370

2905 AAG ATT ATG CAG CAG CGA GCT TTG TCT AAT CCT AAG ATT GAT GTG ATT TGG AAC TCG TCT 2964
371 K I M Q Q R A L S N P K I D V I W N S S 390

2965 GTT GTG GAA GCT TAT GGA GAT GGA GAA AGA GAT GTG CTT GGA GGA TTG AAA GTG AAG AAT 3024
391 V V E A Y G D G E R D V L G G L K V K N 410

3025 GTG GTT ACC GGA GAT GTT TCT GAT TTA AAA GTT TCT GGA TTG TTC TTT GCT ATT GGT CAT 3084
411 V V T G D V S D L K V S G L F F A I G H 430

3085 GAG CCA GCT ACC AAG TTT TTG GAT GGT GGT GTT GAG TTA GAT TCG GAT GGT TAT GTT GTC 3144
431 E P A T K F L D G G V E L D S D G Y V V 450

3145 ACG AAG CCT GGT ACT ACA CAG ACT AGC GTT CCC GGA GTT TTC GCT GCG GGT GAT GTT CAG 3204
451 T K P G T T Q T S V P G V F A A G D V Q 470

3205 GAT AAG AAG TAT AGG CAA GCC ATC ACT GCT GCA GGA ACT GGG TGC ATG GCA GCT TTG GAT 3264
471 D K K Y R Q A I T A A G T G C M A A L D 490

3265 GCA GAG CAT TAC TTA CAA GAG ATT GGA TCT CAG CAA GGT AAG AGT GAT TGA agcttaataagt 3327
491 A E H Y L Q E I G S Q Q G K S D * HindIII 507

3328 atgaactaaaatgcatgtaggtgtaagagctcatggagagcatggaatattgatatccgaccatgtaacagtataataaact 3407

3408 gagctccatctcacttcttctatgaataaacaaggatgttatgatataataacactctatctatgcaccttattgttct 3487

3488 atgataaatttctcttattattataaatcatctgaatcgtgacggcttatggaatgcttcaaatagtacaaaaacaaat 3567

3568 gtgtactataagacttttctaaacaattctaacttttagcattgtgaacgagacataagtgtaagaagacataacaattat 3647

3648 aatggaagaagtttgtctccatttatatattatataattaccacttatgtattatattaggatgttaaggagacataaca 3727

3728 attataaagagagaagtttgtatccatttatatattatataactaccatttatatattatacttatccacttatttaatg 3807

3808 tctttataaggtttgatccatgatatttctaataatttttagttgatatgtatatgaaaggtactatttgaactctcttac 3887

3888 tctgtataaagggttgatcatccttaaagtgggtctatttaattttattgcttcttacagataaaaaaaaaaattatgagt 3967

3968 tggtttgataaaaatattgaaggattttaaataataataaataataaataacatataatatgtatataaattttattata 4047

4048 atataacattttatctataaaaaagtaaatattgtcataaatctatacaatcgtttagccttgctggacgactctcaatta 4127

4128 tttaaacgagagtaaacatatatttgacttttttggttatttaacaaattattatttaaacactatatgaaattttttttttt 4207

4208 atcggcaaggaaataaaaattaaattaggagggacaatgggtgtgtcccaatccttatacaaccaacttccacaggaaggtc 4287

0997888-070501

FIGURE 10 (CONT'D)

4288 aggtcggggacaacaaaaaacaggcaagggaaatTTTTTaatttgggttgctctgtttgctgcataatttatgcagtaa 4367
4368 aacactacacataacccttttagcagtagagcaatggttgaccgtgtgcttagcttctttatTTTtatTTTTtatcagc 4447
4448 aaagaataaataaaaaataaatgagacacttcagggatgtttcaacccttatacaaaaccccaaaaacaagtttcctagca 4527
4528 ccctaccaactaaggtacc 4546
KpnI

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FIGURE 11

PstI

1 ctgcaggaattcattgtactcccagtatcattatagtgaaagttttggctctctcgcgggtggttttttacctctattta 80

81 aaggggttttccacctaaaaattctggtatcattctcactttacttgttactttaatttttcataatctttggttgaaat 160

161 tatcacgcttccgcacacgatatccctacaaatttattatttgttaaacattttcaaaccgcataaaattttatgaagtc 240

241 ccgtctatctttaatgtagtctaacattttcatattgaaatatataatttacttaatttttagcgttggttagaaagcataa 320

321 tgattttattcttattcttcttcatataaaagtgttaataatacaataaaacaaattctttaccttaagaaggatttcccat 400

401 tttatattttaaaaatatatttatcaaataatttttcaaccacgtaaattctcataataataagttgtttcaaaagtaataa 480

481 aatttaactccataatttttttattcgactgatcttaaagcaacacccagtgacacaactagccattttttctttgaat 560

561 aaaaaaatccaattatcattgtatttttttataacaatgaaaatttcaccaacaacatcatttgggtatttctgaagcaa 640

641 gtcattgttatgcaaaattctataattcccatgtgacactacggaagtaactgaagatctgcttttacatgcgagacacat 720

721 cttctaaagtaattttaataatagttactatattcaagatttcatatatcaaataactcaatattacttctaaaaaattaa 800

801 ttagatataattaaaatattacttttttaattttaagtttaattgttgaaatttgtgactattgatttattattctactat 880

881 gtttaaattgttttatagatagtttaaagtaaatataagtaatgtagtagagtgttagagtgttacctaaccataaac 960

961 tataagatttatgggtggactaattttcatatatttcttattgcttttacccttttcttggtatgtaagtcgtaactggaa 1040

1041 ttactgtgggttgccatggcactctgtggtcttttgggttcattgcatggatgcttgcgcaagaaaaagacaaagaacaaag 1120

1121 aaaaaagacaaaacagagagacaaaacgcaatcacacaaccaactcaaattagtcactggctgatcaagatcgccgcgtc 1200

1201 catgtatgtctaaatgccatgcaaagcaacacgtgcttaacatgcacttttaaatgggtcacccatctcaaccacacaca 1280

1281 aacacattgcctttttcttcatcatcaccacaaccacctgtatatattcattctcttccgccacctcaatttcttcaactt 1360

1361 caacacacgtcaacctgcatatgcggtgtcatcccatgccc aaatctccatgcatgttccaaccaccttctcttataata 1440

1441 atacctataaaataacctctaataatcactcacttcttttcatcatccatccatccagagtactactactctactactataata 1520

1521 ccccaacccaactcatattcaataactactctact ATG AAT GGT CTC GAA ACT CAC AAC ACA AGG CTC 1587

1 M N G L E T H N T R L 11

1588 TGT ATC GTA GGA AGT GGC CCA GCG GCA CAC ACG GCG GCG ATT TAC GCA GCT AGG GCT GAA 1647

12 C I V G S G P A A H T A A I Y A A R A E 31

1648 CTT AAA CCT CTT CTC TTC GAA GGA TGG ATG GCT AAC GAC ATC GCT CCC GGT GGT CAA CTA 1707

32 L K P L L F E G W M A N D I A P G G Q L 51

1708 ACA ACC ACC ACC GAC GTC GAG AAT TTC CCC GGA TTT CCA GAA GGT ATT CTC GGA GTA GAG 1767

52 T T T T D V E N F P G F P E G I L G V E 71

Latitude	Longitude	Time	Altitude	Distance	Direction	Remarks
10° 15' N	157° 15' W	10:00	10.0	10.0	10.0	10.0
10° 15' N	157° 15' W	10:05	10.5	10.5	10.5	10.5
10° 15' N	157° 15' W	10:10	11.0	11.0	11.0	11.0
10° 15' N	157° 15' W	10:15	11.5	11.5	11.5	11.5
10° 15' N	157° 15' W	10:20	12.0	12.0	12.0	12.0
10° 15' N	157° 15' W	10:25	12.5	12.5	12.5	12.5
10° 15' N	157° 15' W	10:30	13.0	13.0	13.0	13.0
10° 15' N	157° 15' W	10:35	13.5	13.5	13.5	13.5
10° 15' N	157° 15' W	10:40	14.0	14.0	14.0	14.0
10° 15' N	157° 15' W	10:45	14.5	14.5	14.5	14.5
10° 15' N	157° 15' W	10:50	15.0	15.0	15.0	15.0
10° 15' N	157° 15' W	10:55	15.5	15.5	15.5	15.5
10° 15' N	157° 15' W	11:00	16.0	16.0	16.0	16.0
10° 15' N	157° 15' W	11:05	16.5	16.5	16.5	16.5
10° 15' N	157° 15' W	11:10	17.0	17.0	17.0	17.0
10° 15' N	157° 15' W	11:15	17.5	17.5	17.5	17.5
10° 15' N	157° 15' W	11:20	18.0	18.0	18.0	18.0
10° 15' N	157° 15' W	11:25	18.5	18.5	18.5	18.5
10° 15' N	157° 15' W	11:30	19.0	19.0	19.0	19.0
10° 15' N	157° 15' W	11:35	19.5	19.5	19.5	19.5
10° 15' N	157° 15' W	11:40	20.0	20.0	20.0	20.0
10° 15' N	157° 15' W	11:45	20.5	20.5	20.5	20.5
10° 15' N	157° 15' W	11:50	21.0	21.0	21.0	21.0
10° 15' N	157° 15' W	11:55	21.5	21.5	21.5	21.5
10° 15' N	157° 15' W	12:00	22.0	22.0	22.0	22.0
10° 15' N	157° 15' W	12:05	22.5	22.5	22.5	22.5
10° 15' N	157° 15' W	12:10	23.0	23.0	23.0	23.0
10° 15' N	157° 15' W	12:15	23.5	23.5	23.5	23.5
10° 15' N	157° 15' W	12:20	24.0	24.0	24.0	24.0
10° 15' N	157° 15' W	12:25	24.5	24.5	24.5	24.5
10° 15' N	157° 15' W	12:30	25.0	25.0	25.0	25.0
10° 15' N	157° 15' W	12:35	25.5	25.5	25.5	25.5
10° 15' N	157° 15' W	12:40	26.0	26.0	26.0	26.0
10° 15' N	157° 15' W	12:45	26.5	26.5	26.5	26.5
10° 15' N	157° 15' W	12:50	27.0	27.0	27.0	27.0
10° 15' N	157° 15' W	12:55	27.5	27.5	27.5	27.5
10° 15' N	157° 15' W	13:00	28.0	28.0	28.0	28.0
10° 15' N	157° 15' W	13:05	28.5	28.5	28.5	28.5
10° 15' N	157° 15' W	13:10	29.0	29.0	29.0	29.0
10° 15' N	157° 15' W	13:15	29.5	29.5	29.5	29.5
10° 15' N	157° 15' W	13:20	30.0	30.0	30.0	30.0
10° 15' N	157° 15' W	13:25	30.5	30.5	30.5	30.5
10° 15' N	157° 15' W	13:30	31.0	31.0	31.0	31.0
10° 15' N	157° 15' W	13:35	31.5	31.5	31.5	31.5
10° 15' N	157° 15' W	13:40	32.0	32.0	32.0	32.0
10° 15' N	157° 15' W	13:45	32.5	32.5	32.5	32.5
10° 15' N	15					

1768	CTC	ACT	GAC	AAA	TTC	CGT	AAA	CAA	TCG	GAG	CGA	TTC	GGT	ACT	ACG	ATA	TTT	ACA	GAG	ACG	1827
72	L	T	D	K	F	R	K	Q	S	E	R	F	G	T	T	I	F	T	E	T	91
1828	GTG	ACG	AAA	GTC	GAT	TTC	TCT	TCG	AAA	CCG	TTT	AAG	CTA	TTC	ACA	GAT	TCA	AAA	GCC	ATT	1887
92	V	T	K	V	D	F	S	S	K	P	F	K	L	F	T	D	S	K	A	I	111
1888	CTC	GCT	GAC	GCT	GTG	ATT	CTC	GCT	ACT	GGA	GCT	GTG	GCT	AAG	CGG	CTT	AGC	TTC	GTT	GGA	1947
112	L	A	D	A	V	I	L	A	T	G	A	V	A	K	R	L	S	F	V	G	131
1948	TCT	GGT	GAA	GGT	TCT	GGA	GGT	TTC	TGG	AAC	CGT	GGA	ATC	TCC	GCT	TGT	GCT	GTT	TGC	GAC	2007
132	S	G	E	G	S	G	G	F	W	N	R	G	I	S	A	C	A	V	C	D	151
2008	GGA	GCT	GCT	CCG	ATA	TTC	CGT	AAC	AAA	CCT	CTT	GCG	GTG	ATC	GGT	GGA	GGC	GAT	TCA	GCA	2067
152	G	A	A	P	I	F	R	N	K	P	L	A	V	I	G	G	G	D	S	A	171
2068	ATG	GAA	GAA	GCA	AAC	TTT	CTT	ACA	AAA	TAT	GGA	TCT	AAA	GTG	TAT	ATA	ATC	CAT	AGG	AGA	2127
172	M	E	E	A	N	F	L	T	K	Y	G	S	K	V	Y	I	I	H	R	R	191
2128	GAT	GCT	TTT	AGA	GCG	TCT	AAG	ATT	ATG	CAG	CAG	CGA	GCT	TTG	TCT	AAT	CCT	AAG	ATT	GAT	2187
192	D	A	F	R	A	S	K	I	M	Q	Q	R	A	L	S	N	P	K	I	D	211
2188	GTG	ATT	TGG	AAC	TCG	TCT	GTT	GTG	GAA	GCT	TAT	GGA	GAT	GGG	GAA	AGA	GAT	GTG	CTT	GGA	2247
212	V	I	W	N	S	S	V	V	E	A	Y	G	D	G	E	R	D	V	L	G	231
2248	GGA	TTG	AAA	GTG	AAG	AAT	GTG	GTT	ACC	GGA	GAT	GTT	TCT	GAT	TTA	AAA	GTT	TCT	GGA	TTG	2307
232	G	L	K	V	K	N	V	V	T	G	D	V	S	D	L	K	V	S	G	L	251
2308	TTC	TTT	GCT	ATT	GGT	CAT	GAG	CCA	GCT	ACC	AAG	TTT	TTG	GAT	GGT	GGT	GTT	GAG	TTA	GAT	2367
252	F	F	A	I	G	H	E	P	A	T	K	F	L	D	G	G	V	E	L	D	271
2368	TCG	GAT	GGT	TAT	GTT	GTC	ACG	AAG	CCT	GGT	ACT	ACA	CAG	ACT	AGC	GTT	CCC	GGA	GTT	TTC	2427
272	S	D	G	Y	V	V	T	K	P	G	T	T	Q	T	S	V	P	G	V	F	291
2428	GCT	GCG	GGT	GAT	GTT	CAG	GAT	AAG	AAG	TAT	AGG	CAA	GCC	ATC	ACT	GCT	GCA	GGA	ACT	GGG	2487
292	A	A	G	D	V	Q	D	K	K	Y	R	Q	A	I	T	A	A	G	T	G	311
2488	TGC	ATG	GCA	GCT	TTG	GAT	GCA	GAG	CAT	TAC	TTA	CAA	GAG	ATT	GGA	TCT	CAG	CAA	GGT	AAG	2547
312	C	M	A	A	L	D	A	E	H	Y	L	Q	E	I	G	S	Q	Q	G	K	331
2548	AGT	GAT	ATG	GCG	GAT	ACA	GCT	AGA	GGA	ACC	CAT	CAC	GAT	ATC	ATC	GGC	AGA	GAC	CAG	TAC	2607
332	S	D	M	A	D	T	A	R	G	T	H	H	D	I	I	G	R	D	Q	Y	351
2608	CCG	ATG	ATG	GGC	CGA	GAC	CGA	GAC	CAG	TAC	CAG	ATG	TCC	GGA	CGA	GGA	TCT	GAC	TAC	TCC	2667
352	P	M	M	G	R	D	R	D	Q	Y	Q	M	S	G	R	G	S	D	Y	S	371
2668	AAG	TCT	AGG	CAG	ATT	GCT	AAA	GCT													

[illegible]

2728	CTC	TCC	AGC	CTT	ACC	CTT	GTT	GGA	ACT	GTC	ATA	GCT	TTG	ACT	GTT	GCA	ACA	CCT	CTG	CTC		2787
392	L	S	S	L	T	L	V	G	T	V	I	A	L	T	V	A	T	P	L	L		411
2788	GTT	ATC	TTC	AGC	CCA	ATC	CTT	GTC	CCG	GCT	CTC	ATC	ACA	GTT	GCA	CTC	CTC	ATC	ACC	GGT		2847
412	V	I	F	S	P	I	L	V	P	A	L	I	T	V	A	L	L	I	T	G		431
2848	TTT	CTT	TCC	TCT	GGA	GGG	TTT	GGC	ATT	GCC	GCT	ATA	ACC	GTT	TTC	TCT	TGG	ATT	TAC	AA	<i>g</i>	2907
432	F	L	S	S	G	G	F	G	I	A	A	I	T	V	F	S	W	I	Y	K		451
2908	<i>taagcacacattttatcatcttacttcataattttggtgcaatatgtgcgatgcatgtgttgagccagtagctttggatcaat</i>																				2987	
2988	<i>ttttttggtcgaataacaaatgtaacaataagaaattgcaaattctagggaacatttggttaactaaatacgaaatttga</i>																				3067	
3068	<i>cctagctagcttgaatgtgtctgtgtatatcatctatataggtaaaatgcttggtatgataacctattgatttgtgaatag</i>																				3146	
3147	G	TAC	GCA	ACG	GGA	GAG	CAC	CCA	CAG	GGA	TCA	GAC	AAG	TTG	GAC	AGT	GCA	AGG	ATG	AAG		3204
452	Y	A	T	G	E	H	P	Q	G	S	D	K	L	D	S	A	R	M	K		470	
3205	TTG	GGA	AGC	AAA	GCT	CAG	GAT	CTG	AAA	GAC	AGA	GCT	CAG	TAC	TAC	GGA	CAG	CAA	CAT	ACT		3264
471	L	G	S	K	A	Q	D	L	K	D	R	A	Q	Y	Y	G	Q	Q	H	T		490
3265	GGT	GGG	GAA	CAT	GAC	CGT	GAC	CGT	ACT	CGT	GGT	GGC	CAG	CAC	ACT	ACT	<u>TAA</u>	<u>gctttaataagta</u>				3327
491	G	G	E	H	D	R	D	R	T	R	G	G	Q	H	T	T	*	HindIII				507
3328	<i>tgaactaaaaatgcatgttaggtgtaagagctcatggagagcatggaatattgtatccgaccatgtaacagtataataaactg</i>																				3407	
3408	<i>agctccatctcacttcttcttatgaataaaciaaaggatgttatgatataattaacactctatctatgcacettattgttcta</i>																				3487	
3488	<i>tgataaatctcctcttattattataaatcatctgaatcgtgacggcttatggaatgcttcaaatagtacaaaaacaaatg</i>																				3567	
3568	<i>tgtactataagacttttctaacaattctaacttttagcattgtgaacgagacataagtgttaagaagacataacaattata</i>																				3647	
3648	<i>atggaagaagtttgtctccatttatatattatataattaccacattatgtattatattaggatgttaaggagacataacaa</i>																				3727	
3728	<i>ttataaagagagaagtttgtatccatttatatattatataactaccacatttatatattataacttatccacttattttaatgt</i>																				3807	
3808	<i>ctttataaggtttgatccatgatatttctaataattttagttgatatgtatatgaaaggttactatttgaactctcttact</i>																				3887	
3888	<i>ctgtataaaggttggatcatccttaaagtgggtctattttaattttattgcttcttacagataaaaaaaaaaattatgagtt</i>																					

FIGURE 11 (CONT'D)

4288 ggtcggggacaacaaaaaacaggcaagggaaattttttaatttgggttgcttcttgctgcataatttatgcagtaaa 4367

4368 aactacacataacccttttagcagtagagcaatggttgaccgtgtgcttagcttctttatttattttttatcagca 4447

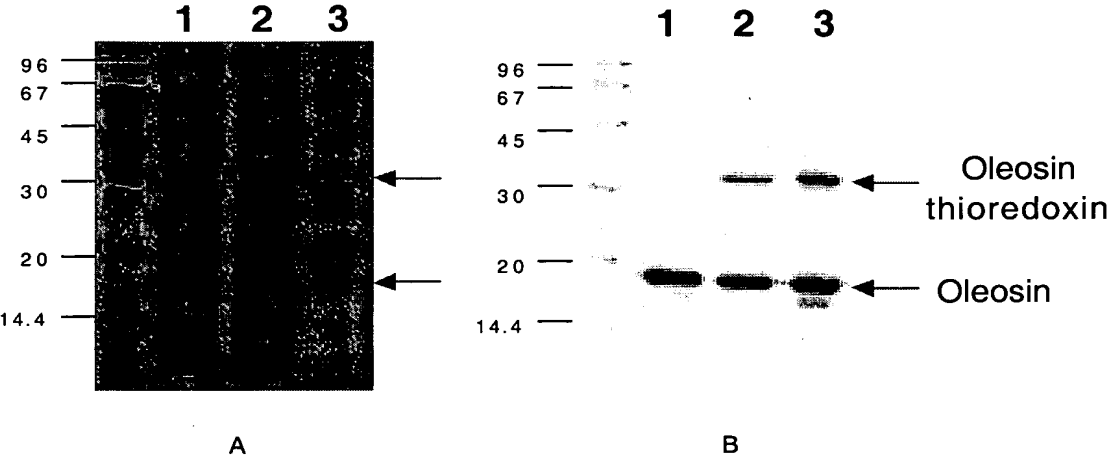
4448 aagaataaataaaaataaaatgagacacttcagggatgtttcaacccttatacaaaacccccaaaaacaagtttcctagcac 4527

4528 cctaccaactaaggtacc 4545

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FIGURE 12



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FIGURE 13

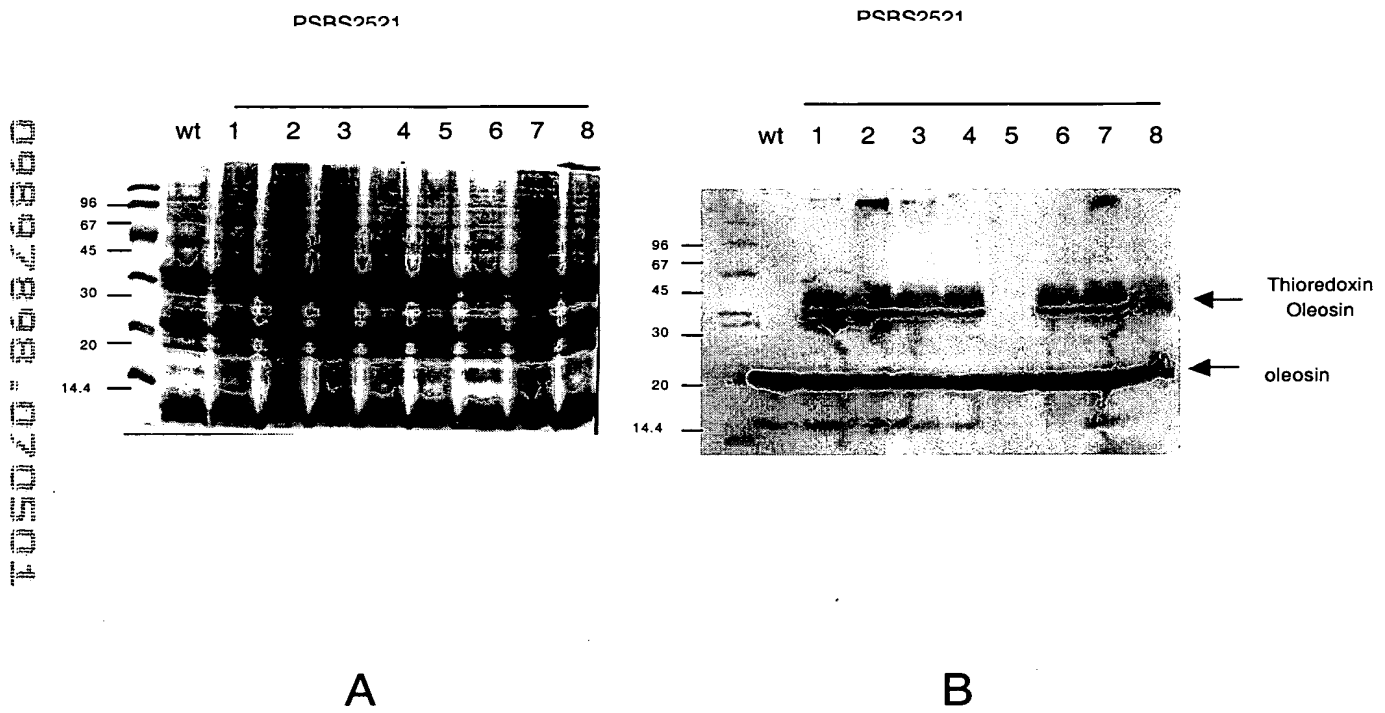


FIGURE 14

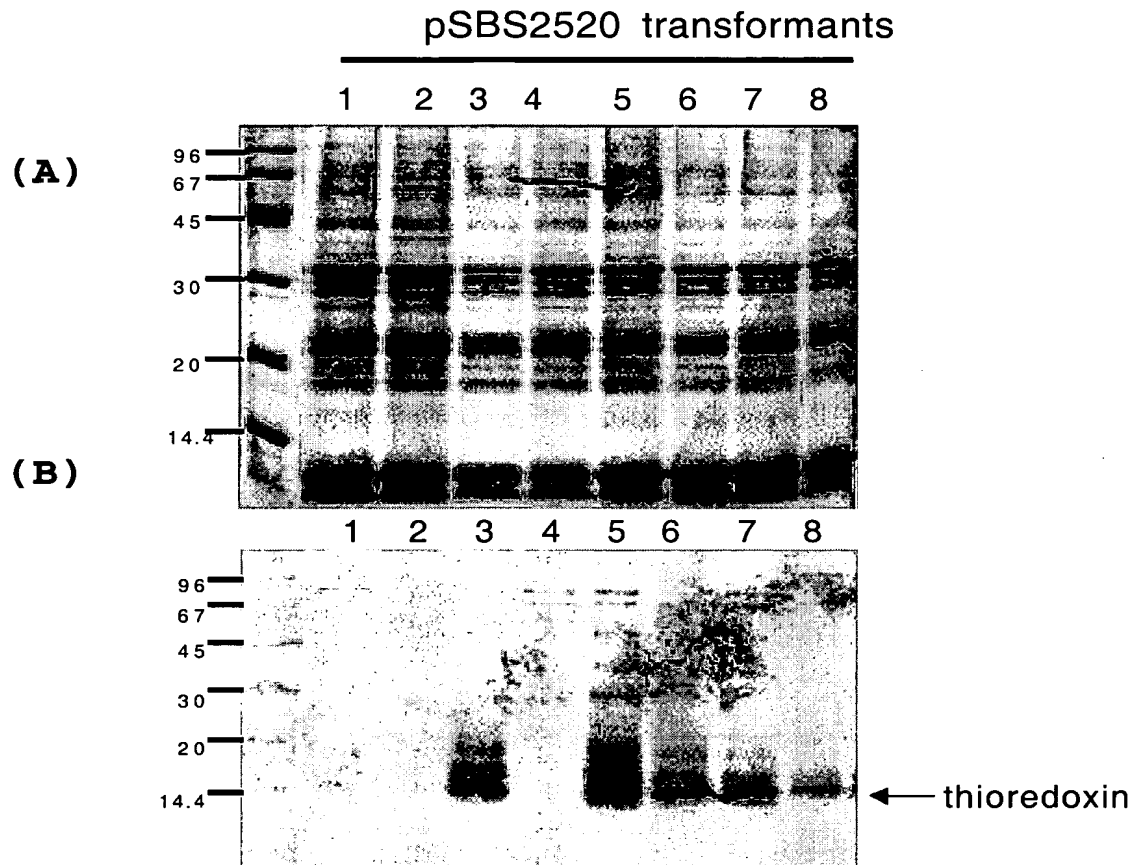
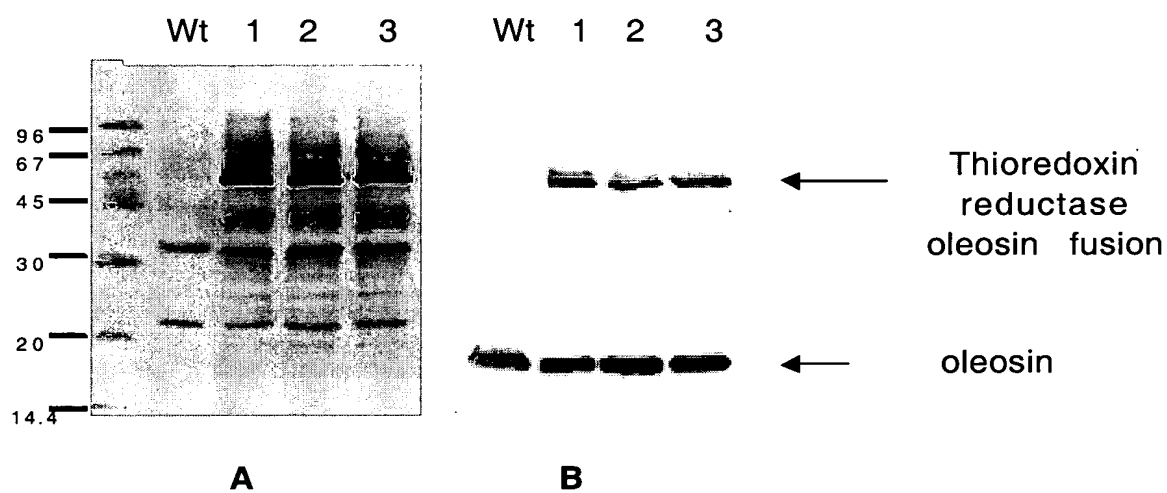
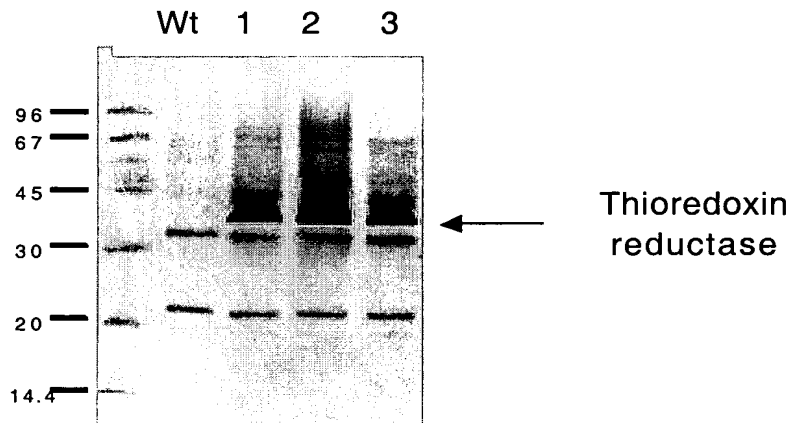


FIGURE 15



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FIGURE 16



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FIGURE 17

